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each pixel area to form a primary or secondary color thereon, said pixel area being a unit area,

wherein, as to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color.

27. (New) The data buffer configuration according to Claim 26, wherein the same data may be written into two print buffers.
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REMARKS

This application has been reviewed in light of the Office Action dated June 3, 2002. Claims 1-27 are pending in this application. Claims 1, 17, 20, and 22, which are the independent claims, have been amended to define still more clearly what Applicants regard as their invention. Claims 25-27 have been added to provide Applicants with a more complete scope of protection. Favorable reconsideration is requested.

Claims 1-24 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention, asserting that the recitation "the recording head" in Claims 1, 17, 20, and 22 lacks antecedent basis. Applicants have amended Claims 1, 17, 20, and 22 and replaced "the" with -a-. Consequently, Applicants submit that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

The Office Action rejected Claims 1-5, 9-17, 20, 22 and 24 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,748,453 (Lin et al.), and rejected

Claims 6-8, 18, 19, 21, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Lin et al. in view of U.S. Patent No. 4,593,295 (Matsufuji et al.). Applicants respectfully traverse these rejections.

The aspect of the present invention set forth in Claim 1 is a print apparatus which forms a color image by applying ink materials of plural colors onto a print medium, using a recording means having a plurality of nozzles to eject ink materials. The apparatus includes a scanner to scan the recording means in forward scanning and backward scanning directions, where the scanner scans along an arrangement direction of the plurality of nozzles. A controller of the apparatus controls a movement of a recording head in the forward scanning and the backward scanning directions and a print controller of the apparatus controls the printing by means of the plurality of nozzles. The printing is executed by applying plural ink materials for each pixel area to form a primary or secondary color thereon, the pixel area being a unit area. In regard to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color. The ink materials of plural colors are applied with their application order symmetric regarding the dots of the secondary color to be formed at the plural positions on the pixel area.

One important feature of Claim 1 is that the printing is executed by applying plural ink materials for each pixel area to form a primary or secondary color thereon, the pixel area being a unit area. In regard to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color. The ink materials of plural colors are applied with their application order symmetric regarding the dots of the secondary color to be formed at the plural positions on the pixel area.

Lin et al., as understood by Applicants, relates to a method of depositing spots of liquid ink upon selected pixel centers on a substrate having poor ink absorptive properties so as to prevent the flow of liquid ink from one spot to an overlapping adjacent one. The line of information is printed in at least two passes so as to deposit spots of liquid ink on selected pixel centers in a checkerboard pattern wherein only diagonally adjacent pixel areas are deposited in the same pass. On the second pass the complementary checkerboard pattern is deposited. Ink apparently is not deposited on horizontally or vertically adjacent pixel areas during the single pass since the spots on these adjacent areas have overlapping portions. The Office Action states that "Lin et al. discloses every element of the instant claimed print apparatus. . . ." However, Applicants submit that nothing in Lin et al. would teach or suggest the features of Claim 1 added by this amendment, that is, nothing in Lin et al. would teach or suggest an apparatus where printing is executed by applying plural ink materials for each pixel area to form a primary or secondary color thereon, where, in regard to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color, and the ink materials of plural colors are applied with their application order symmetric regarding the dots of the secondary color to be formed at the plural positions on the pixel area.

Independent Claim 20 is a print method claim that corresponds to apparatus Claim 1, and is believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. In addition, Applicants submit that independent Claims 25 and 26 include the same feature of a print controller as recited in Claim 1 and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. Applicants submit that support in the specification for Claims 25-27 can be found at least at page 22, line 19 to page 23, line 17 of the specification, with specific reference to FIGs.

3-7.

The aspect of the present invention set forth in Claim 17 is a print apparatus which forms a color image by applying ink materials of plural colors onto a print medium using a recording means having a plurality of nozzles to eject ink materials. The apparatus includes a scanner to scan the recording means in forward scanning and backward scanning directions, where the scanner scans along an arrangement direction of the plurality of nozzles, and a controller to control a movement of a recording head in the forward scanning and the backward scanning directions. A print controller of the apparatus controls the printing by applying plural ink materials for each pixel area (a unit area) to form a color thereon. The print controller applies the ink materials of plural different colors with their application order symmetric to form a process color so as to form plural dots, in ink materials of plural colors, at the plural positions on the pixel area.

One important feature of Claim 17 is the print controller of the apparatus which controls the printing by applying plural ink materials for each pixel area to form a color thereon, where the print controller applies the ink materials of plural different colors with their application order symmetric to form a process color so as to form plural dots, in ink materials of plural colors, at the plural positions on the pixel area.

Lin et al., as stated above, relates to a method of depositing spots of liquid ink upon selected pixel centers on a substrate having poor ink absorptive properties so as to prevent the flow of liquid ink from one spot to an overlapping adjacent one. The line of information is printed in at least two passes so as to deposit spots of liquid ink on selected pixel centers in a checkerboard pattern wherein only diagonally adjacent pixel areas are deposited in the same pass. On the second pass the complementary checkerboard pattern is deposited. Ink apparently is not deposited on horizontally or vertically adjacent pixel areas during the single pass since the spots on these adjacent areas have overlapping portions.

However, nothing in Lin et al. would teach or suggest the features of Claim 17 added by this amendment, that is, nothing in Lin et al. would teach or suggest the print controller of the apparatus that controls the printing by applying plural ink materials for each pixel area to form a color thereon, where the print controller applies the ink materials of plural different colors with their application order symmetric to form a process color so as to form plural dots, in ink materials of plural colors, at the plural positions on the pixel area.

Independent Claim 22 is a print method claim that corresponds to apparatus Claim 17, and is believed to be patentable for at least the same reasons as discussed above in connection with Claim 17.

A review of the other art of record, including Matsufuji et al., has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

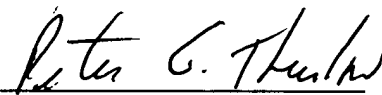
The other claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Twice Amended) A print apparatus which forms a color image by applying ink materials of plural colors onto a print medium, using a recording means having a plurality of nozzles to eject ink materials, said apparatus comprising:
 - a scanner to scan the recording means in forward scanning and backward scanning directions, wherein said scanner scans along an arrangement direction of the plurality of nozzles;
 - a controller to control a movement of [the] a recording head in the forward scanning and the backward scanning directions; and
 - a print controller to control the printing by means of said plurality of nozzles,wherein said [print controller controls the symmetric ejection order of a plurality of colors from said plurality of nozzles onto a pixel area to form a secondary color]
printing is executed by applying plural ink materials for each pixel area to form a primary or secondary color thereon, said pixel area being a unit area,
wherein, as to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color, and
said ink materials of plural colors are applied with their application order symmetric regarding said dots of the secondary color to be formed at the plural positions on the pixel area.

17. (Twice Amended) A print apparatus which forms a color image by applying ink materials of plural colors onto a print medium using a recording means having a plurality of nozzles to eject ink materials, said apparatus comprising,

a scanner to scan the recording means in forward scanning and backward scanning directions, wherein said scanner scans along an arrangement direction of the plurality of nozzles;

a controller to control a movement of [the] a recording head in the forward scanning and the backward scanning directions; and

a print controller to control the printing by [means of said plurality of nozzles,

wherein said print controller controls the symmetric ejection order of a plurality of colors from said plurality of nozzles onto a pixel area to form a process color]

applying plural ink materials for each pixel area to form a color thereon,

said pixel area being a unit area,

wherein said print controller applies said ink materials of plural different colors with their application order symmetric to form a process color so as to form plural dots, in ink materials of plural colors, at the plural positions on said pixel area.

20. (Twice Amended) A print method which forms a color image by applying ink materials of plural colors onto a print medium using a recording means having a plurality of nozzles to eject ink materials, said method comprising the following steps:

scanning the recording means in forward scanning and backward scanning directions, wherein the scanning is performed along an arrangement direction of the plurality of nozzles;

controlling a movement of [the] a recording head in the forward scanning and the backward scanning directions; and

controlling the printing by means of the plurality of nozzles,

wherein, in said printing control step, the [printing controls the symmetric ejection order of a plurality of colors from the plurality of nozzles onto a pixel area to form a secondary color] printing is executed by applying plural ink materials for each pixel area to form a primary or secondary color thereon, the pixel area being a unit area.

wherein, as to the pixel area forming the secondary color thereon, dots of the secondary color are formed, in ink materials of plural colors, at plural positions on the pixel area to form the secondary color, and

the ink materials of plural colors are applied with their application order symmetric regarding the dots of the secondary color to be formed at the plural positions on the pixel area.

22. (Twice Amended) A print method which forms a color image by applying ink materials of plural colors onto a print medium using a recording means having a plurality of nozzles to eject ink materials, said method comprising the following steps:

scanning the recording means in forward scanning and backward scanning directions, wherein the scanning is performed along an arrangement direction of the plurality of nozzles;

controlling a movement of [the] a recording head in the forward scanning and the backward scanning directions; and

controlling the printing by [means of the plurality of nozzles] applying plural ink materials for each pixel area to form a color thereon, said pixel area being a unit area,

wherein, in said printing control step, [the printing controls the symmetric ejection order of a plurality of colors from the plurality of nozzles onto a pixel area to form a process color] the print controller applies the ink materials of plural different colors with their application order symmetric to form a process color so as to form plural dots, in ink materials of plural colors, at the plural positions on the pixel area.